

# Vaccines and Immunosuppression

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[00:00:02] **Dr. GG deFiebre:** Hello, and welcome to the SRNA "Ask the Expert" podcast series. This episode is titled, "Vaccinations and Immunosuppressants." My name is GG deFiebre, and I moderated this episode. SRNA is a nonprofit focused on support, education, and research of rare neuroimmune disorders. You can learn more about us on our website at [wearesrna.org](https://wearesrna.org). "Ask the Expert" is sponsored in part by Genentech.

[00:00:28] For this episode, we are joined by Dr. Eoin Flanagan. Dr. Flanagan is a neurologist at the Mayo Clinic in Rochester, Minnesota. You can view their full bio in the podcast description.

[00:00:41] Thank you so much, Dr. Flanagan, for joining me today to talk about vaccines and immunosuppressants. Can you just first explain how immunosuppressive medications impact the immune system and vaccine efficacy?

[00:00:54] **Dr. Eoin Flanagan:** Yeah. Thanks so much. I'm delighted to be here. I think the immunosuppressants that we use in many of these rare autoimmune diseases do dampen down your immune system. And that means that you don't fight infections quite as well.

[00:01:09] But also, when you get a vaccine, your immune system does not kick in as well to make that vaccine response as good as it would be if you weren't on immune-lowering medication. So, it is an important factor that we consider when we're seeing patients and advising about vaccinations.

[00:01:27] **Dr. GG deFiebre:** Got it. And so, what are the primary concerns or risks when vaccinating someone who's on immunosuppressive therapies?

[00:01:36] **Dr. Eoin Flanagan:** Well, there's a few things. So, one, some of the vaccines have a live component, which means they contain some live material, be it a bacteria or virus. And you don't want to give that to an immunosuppressed patient because that might lead to that virus propagating and causing a problem. So, we tend to try to avoid live vaccines in patients on immunosuppressive medications. So, that's one thing.

[00:02:01] The second thing we consider is, we may not get as good a response as we would if people were not on immunosuppressive medication. Sometimes that might mean that we would need to vaccinate more often or repeat booster vaccinations down the line, when maybe patients are off those treatments, for example. It sometimes depends on which medications people are on, but some of them can certainly interfere with the response more than others.

[00:02:29] **Dr. GG deFiebre:** What vaccines are generally recommended for people on immunosuppressants that are managing conditions like NMOSD or MOGAD?

[00:02:44] **Dr. Eoin Flanagan:** I think there are a number of ones that would be recommended in everybody. So, that would include the annual influenza vaccine, which will be the inactivated influenza vaccine, which is not the nasal mist because that one has a live component.

[00:02:54] And also the latest COVID-19 vaccine, we recommend annually. And then, the pneumococcal vaccine, which is against pneumonia, is an every five-year vaccine, and there are a couple of series that you get with that. So, we generally would recommend that vaccination.

[00:03:15] And then, I suppose the shingles vaccine. It may be worth boosting that. There's an inactivated shingles vaccine called Shingrix that can be reasonable. There is also a live shingles vaccine that you would want to avoid, so you need to avoid the live. And then, there are other vaccinations that maybe are more optional, like hepatitis B vaccination, for example, HPV vaccination for people of younger ages.

[00:03:42] And then, for neuromyelitis optica spectrum disorder, there's a particular vaccine that we need to recommend in people who are going on complement inhibitors, which are a type of medication that works very well for that condition, but do increase the risk of a type of bacterial meningitis.

[00:04:00] So, in patients on ravulizumab or eculizumab (that's Soliris or Ultomiris), we recommend those patients get vaccinated against meningitis serotypes to prevent meningial infection. What I will also say is in some of those patients, if they're transitioning from one immunosuppressant -- say, for example, rituximab or a medication that depletes your B cells -- then if they are going on to the complement inhibitor after, we may not get quite as good a response to that vaccination.

[00:04:38] And in those cases, we'll often consider using prophylactic antibiotics, like penicillin, to protect those people until they can mount a response in the future, until that rituximab is out of the system, which may take many years. And then, to do that, we can sometimes follow the levels of the response to the vaccine in their blood, and see if they've made a good response.

[00:05:00] So, I think that is a good example of how sometimes we need to follow the level of the response to the vaccine over time. Sometimes we need to give additional boosters and maybe revaccinate completely once the immunosuppression is out of their system.

[00:05:15] **Dr. GG deFiebre:** Got it. And so, are there any vaccines that are contraindicated or is it just those that are live vaccines that are typically not recommended in those on immunosuppressants?

[00:05:25] **Dr. Eoin Flanagan:** It's typically those live vaccines that seem to be the biggest problem for people.

[00:05:30] **Dr. GG deFiebre:** Got it. And then, for patients who are on approved therapies, what are prophylactic antibiotics and how does that impact vaccination recommendations or timings?

[00:05:41] **Dr. Eoin Flanagan:** The major scenario I mentioned is for that meningococcal vaccination because that's bacteria. Antibiotics, we would use things like penicillin to protect us, given there's that risk of meningitis.

[00:05:56] It's not a 100% protective, but it certainly gives you additional protection in addition to the vaccine. And that's particularly important in patients who are transitioning, again, from a prior immunosuppressant where they may not get as much of a response. While if you're starting out right away on a complement inhibitor, you'll get a better response to the vaccines, and you may not need that prophylactic antibiotic.

[00:06:18] But in some countries, people use prophylactic antibiotics in all patients on those treatments. So, the practice varies a little bit, and there will be some guidelines, I think, coming in the future to help guide us on who to use the prophylactic antibiotics on.

[00:06:32] **Dr. GG deFiebre:** Where should someone who's on immunosuppressants go to receive these vaccines? Is it something that they should go to a specialist for? Or can they get them at the pharmacy? Or at their primary care physician's office?

[00:06:45] **Dr. Eoin Flanagan:** I think getting them at the place that's most convenient for them, so that might be the pharmacy, the primary care. I think what is a good idea is to get input from your neurologist or from your physician, who's looking after your rare immune condition, to get advice on which vaccines to take and which ones to maybe avoid. I think having those discussions upfront, but then getting the vaccine once they give the recommendations, that's often through primary care or pharmacy, and that's perfectly fine.

[00:07:11] **Dr. GG deFiebre:** Is there an ideal time to administer vaccines to maximize their effectiveness while someone is on therapy? So, should someone wait a few weeks after treatment? Or how does that timing work?

[00:07:23] **Dr. Eoin Flanagan:** So, yeah, there are some timing issues. I suppose I'll give a first example of a newly diagnosed patient. It's probably worthwhile in those patients, if you're going to start on immunosuppressant, to give the first dose of the vaccine prior to starting the immunosuppressant. We don't like to wait for the treatments because those patients are vulnerable and at risk. We would generally not wait for the second dose but rather start the immunosuppressant and give the second dose after.

[00:07:49] Now, for treatments that last for about six months, many of the B-cell depleting treatments like rituximab and others last for six months, there are some guidelines that suggest that maybe vaccinating about four weeks prior to the next dose might give you the best response.

[00:08:05] But we don't really know how well that works because sometimes those medications have a very long-lasting effect. So, it's not clear how much of a difference that makes. But some people recommend for those monthly CD20 or B-cell depleting agents that we will go four weeks before.

[00:08:21] **Dr. GG deFiebre:** And you talked a little bit about measuring to see if a vaccine has been effective or not. So, how do healthcare providers determine whether a patient's immune system has responded adequately to a vaccine? What does that entail?

[00:08:35] **Dr. Eoin Flanagan:** We can sometimes measure something called the serology or the antibodies that are made against that organism. For example, varicella-zoster virus or shingles, we can measure antibodies in the blood.

[00:08:48] We can sometimes measure antibody responses against other vaccines to see are we mounting a response to many of those different vaccines to get an overall sense of how our immune system is affected. But it's interesting. It seems to be different between different medications. For example, in the COVID-19 pandemic, there was a lot of interest in the different multiple sclerosis type medications.

[00:09:08] And it seemed like the B-cell depleting agents seem to be a little bit more problematic in terms of the vaccine response when compared to some of the other MS medications. So, in people on B-cell depleting agents, you may want to be repeating boosters a bit more frequently.

[00:09:24] **Dr. GG deFiebre:** If there are vaccine series that require follow-up doses, what happens if someone misses a dose while on immunosuppressants?

[00:09:34] **Dr. Eoin Flanagan:** I think it's just important to try and get that follow-up dose. If you miss a dose, then you probably want to go back and see if you can get it at the nearest available opportunity.

[00:09:44] Sometimes, there are boosters recommended. If you're going off an immunosuppressant, we want to revaccinate you once those are finished, or if you're on a different agent.

[00:09:54] So, it is important to try and keep up with those timings. If you miss a dose, then I would be back to your doctor and discuss when is the next available time that you could come and get caught up.

[00:10:03] **Dr. GG deFiebre:** Are there any additional safety considerations for those receiving vaccines while on these drugs?

[00:10:11] **Dr. Eoin Flanagan:** Not really. What we know is that sometimes an infection can trigger episodes, say, for example, flare-ups. We've seen this with COVID-19, where it could trigger a MOG or NMO flare-up.

[00:10:25] Sometimes, there's a concern for patients that the vaccine may trigger a relapse. It seems to be that the vaccine does that, it can happen, but it's far, far less with the vaccine than we see with the infection.

[00:10:37] So, getting that protection against the infection is going to be better. But we do sometimes see transiently, for example, for 24 hours people may have a fever. And sometimes, in the setting of MS, NMO, or MOG, they may get a little bit worse temporarily, in the setting of the vaccine, and then they're back ok again.

[00:10:56] I think the best thing is to try and get the vaccines and keep your immune system protected.

[00:11:02] **Dr. GG deFiebre:** And is this the case for individuals who potentially have a diagnosis like MOG or NMO, who are not on immunosuppressants? Are there any additional risks in that sense?

[00:11:15] **Dr. Eoin Flanagan:** Not really. I suppose those people are not quite as at risk if they're not on treatment. So then, in that situation, you might want to talk to your doctor, and it would be recommended to be on the regular vaccinations that we recommend, that are age-related for the normal population.

[00:11:32] Because some patients, particularly with MOG antibody disease, just have one attack and then they're not on any treatment. So, I think it's ok.

[00:11:40] The other thing to mention is that there are some reports, particularly with MOG antibody-associated disease, that a vaccine triggered the first attack. So, if a patient has that or that happened, then we generally recommend avoiding that vaccine in the future.

[00:11:55] But that doesn't mean that you can't have any other vaccine. So, if you have this and it's related to the influenza vaccine, you'll never get the influenza vaccine again. But you can still get other vaccines to protect yourself, because it looks like it's specific to that particular vaccine in that person, and those other vaccinations should be fine.

[00:12:13] **Dr. GG deFiebre:** What does recent research say about the effectiveness of COVID-19 vaccines or other vaccines in patients who are on immunosuppressive medications?

[00:12:25] **Dr. Eoin Flanagan:** I think, again, we touched on this a little bit earlier that the CD20, the B-cell depleting agents, you may not get quite as good a response. So, in that situation, you could talk to your doctor.

[00:12:37] We recommend it annually, but maybe you could do it more frequently if you're on those B-cell depleting agents. So, there is some sense that you may not get quite as good a response.

[00:12:46] And then, the other thing to mention is, again, trying to remember to maybe get that vaccine before you start the treatment to get that response built in before your immunosuppressant starts. Because usually, when you have a new diagnosis, it takes a few weeks to get on treatment anyway, and that will be sufficient time to develop a response.

[00:13:04] What you wouldn't want to do is do the vaccine the next day, start the treatment, because then it may still affect the response. So usually, we wait a few weeks, but we don't want to, again, wait for those second doses two months down the line because that's too long to be vulnerable for an attack of one of these conditions.

[00:13:19] **Dr. GG deFiebre:** Other than just giving someone more doses of a vaccine, are there any new vaccine technologies or approaches that are being developed specifically for those who are on immunosuppressant medications?

[00:13:32] **Dr. Eoin Flanagan:** I'm not sure on that one. We've learned a lot about vaccines in the era of COVID-19, so mRNA vaccines and different ways to give vaccines. There's also interest in vaccines, for example, for Epstein-Barr virus, which is linked and thought to be a risk factor for developing MS, and thought to be the possible trigger for multiple sclerosis.

[00:13:55] So, there is some interest in developing vaccines to maybe prevent autoimmune diseases happening. So, I think that's part of the field. Vaccines are also used sometimes in cancer research with vaccines to try and induce a response against the cancer.

[00:14:11] So, there are some areas where it has been used, but I'm not aware of other technologies that are just specifically for immunosuppressed patients.

[00:14:20] **Dr. GG deFiebre:** Got it. What are some common misconceptions that someone on immunosuppressants might have about vaccinations? And how can these be addressed? What comes up when you speak to patients?

[00:14:32] **Dr. Eoin Flanagan:** I think sometimes patients think, well, if the vaccine won't work, then there's no point in getting it. But I think in reality, actually, you do get some response, and it will give you some protection.

[00:14:43] And what they find is even if you don't make a good antibody response to that vaccination, sometimes the other parts of your immune system, like the T-cells and other things, are protective.

[00:14:51] So, what we would see in the era of COVID-19, when the pandemic was at its worst, that patients who had no vaccination would do worse than those who had a partial response to vaccine. So, the bottom line is that you're better to get the vaccine.

[00:15:08] The other concern, of course, of patients is that the vaccine will trigger an episode. And, in general, we see it much more commonly that the infection itself will trigger the episode, and patients will do much more poorly if they get the infection itself rather than the vaccine.

[00:15:23] Many of these are inactivated vaccines, so they shouldn't cause too much harm. So, it's good just to get them to give you that extra layer of protection.

[00:15:32] **Dr. GG deFiebre:** How can patients advocate for themselves when discussing vaccination with their healthcare providers? How does that conversation go?

[00:15:40] **Dr. Eoin Flanagan:** I will say, here at the Mayo Clinic, we have a multidisciplinary group, and we have our pharmacists actually, that assists us and our nursing team. So, sometimes that can happen through the nurse visit, through the pharmacy visit, or in front of the doctor.

[00:15:54] But I think it's important to bring that conversation if your doctor doesn't mention it. Maybe bring that conversation up. What should I be thinking about vaccines? Because it is very important, and really prevention is better than cure.

[00:16:07] So really, if we can prevent these infections, we can really go a long way to improving people's lives. Because when people do get developed, say, they get a shingles infection, they can really be down. They can become disseminated. People can be in hospital. These can be really serious things.

[00:16:23] Or COVID-19, we saw lots of people being very severely ill. So, it is really worthwhile thinking about this early on. At the time of diagnosis, it's a lot of information coming in, but it's good to think about that and to think about it and follow up as you go forward, to try and give yourself that protection.

[00:16:41] **Dr. GG deFiebre:** I am moving on to more of the public health realm as someone who has a public health background. What are the public health implications of ensuring that there's adequate vaccination in those who are immunosuppressed?

[00:16:56] **Dr. Eoin Flanagan:** Well, I think it gives you more protection. When I'm working in the hospital, we often see patients come in with infections who are on immunosuppressive medications. Some of those infections, we don't have vaccines for, like West Nile virus or other things, but for the ones that we do have vaccination for, we can prevent against those.

[00:17:17] And then, you can imagine that if none of the people who are immunosuppressed have their vaccinations, a high proportion of them might be in the hospitals. That will fill up the hospitals over the wintertime. And then, there won't be enough space for many of the other individuals who come into hospital with illnesses.

[00:17:34] So, it could really overwhelm the health system. So, it is quite important. And then, I think it's important to encourage your relatives if you're going to be around them, 'Could you get vaccinated and give me that bit more protection?' Even if they're not immunosuppressed, that they look at boosting all their vaccines so you're not bringing that infection into the community.

[00:17:54] **Dr. GG deFiebre:** You answered my next question. So, moving on, what advice would you give to patients who are hesitant about getting vaccinated due to their condition or the treatment that they're on?

[00:18:06] **Dr. Eoin Flanagan:** These are personal choices, and I think this requires a discussion with the doctor. We don't want to make decisions for people. We're not going to mandate these, but we're always looking out.

[00:18:17] The primary value at Mayo Clinic is the needs of the patient come first. So, we're just looking out for patients and what's in their best interest.

[00:18:26] But some people have concerns about different types of vaccine. If you have concerns about one, then we'll encourage people, 'Well, at least maybe consider this one, or that one, or a different one.'

[00:18:35] So, I think that's a discussion with the doctor, and we understand sometimes there can be religious or other exemptions that people have. And I think we just have to work as a team and try and offer the best vaccination strategy that we have.

[00:18:50] And knowing that overall, the benefit of vaccines on the health of all of us is really great, particularly people whose immune system is lower. This is going to give you that extra protection that you'll need if you do develop an infection.

[00:19:06] **Dr. GG deFiebre:** On the flip side, what should healthcare providers know to better support their patients who are on immunosuppressants when it comes to vaccinations?

[00:19:15] **Dr. Eoin Flanagan:** What I always tell my trainees is that any patient who is immunosuppressed that should be part of their problem list -- that one of the problems is immunosuppression. Because when those patients present to the hospital, knowing that they're immunosuppressed makes the team consider at least infection may be part of the reason they're in the hospital.

[00:19:35] And then, I think the doctors should be discussing vaccination upfront early on. That should be part of the initial discussion at the time of diagnosis. So, we're planning ahead, and then we're not trying to catch up on vaccines.

[00:19:46] I know all of us have missed opportunities. I had a patient who I missed an opportunity to vaccinate with a pneumococcal vaccine, and then they came back with a pneumococcal infection, and were in the hospital. So, you really don't want to miss that opportunity at the time of diagnosis.

[00:20:02] **Dr. GG deFiebre:** Anything else you want to mention that we haven't already talked about?

[00:20:07] **Dr. Eoin Flanagan:** No. I would just encourage people to bring this up with their doctor, talk to their doctors about this, or the nurses, or the pharmacy team, your healthcare team, your provider. Bring this up and have a frank discussion.

[00:20:21] And really, the overall benefits of vaccination really far, far outweigh any risks. So, I really think it's important for people to give themselves that layer of protection while they're on those immunosuppressive medications.

[00:20:35] **Dr. GG deFiebre:** Great. Thank you so much.

[00:20:36] **Dr. Eoin Flanagan:** Thanks so much.

[00:20:43] **Dr. GG deFiebre:** "Ask the Expert" is sponsored in part by Genentech. Founded more than 40 years ago, Genentech is a leading biotechnology company that discovers, develops, manufactures, and commercializes medicines to treat patients with serious and life-threatening medical conditions.

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